

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A SYNOPSIS OF THE PHILIPPINE LAND MOLLUSKS
OF THE GENUS HEMITRICHIA.¹

BY PAUL BARTSCH,

*Curator, Division of Mollusks and Cenozoic Invertebrates,
U. S. National Museum.*

In the Proceedings of this Society I published on May 19, 1938, "A Synopsis of the Philippine Land Mollusks of the Subgenus *Ryssota*." On March 11, 1939, "A Synopsis of the Philippine Land Mollusks of the Subgenera *Lamarckiella* and *Pararyssota* of the Genus *Ryssota*" was likewise published here.

The present paper is a third synopsis, dealing with the genus *Hemitrichia*. In it I have attempted to render available the information furnished by the immense collection in the United States National Museum. I have avoided publication of previously described species except where they seemed necessary to an understanding of the subspecies included under them; I have, however, included them in the keys.

It is hoped that the fully illustrated monograph on "The Larger Zonitid Land Mollusks of the Philippine Islands" may find publication at some not all too distant date.

HEMITRICHIA Möllendorff.

In 1888, von Möllendorff created the genus *Hemitrichia*² to embrace the Philippine Island land mollusks that have a globose or depressed-globose shell, which is regularly granulated upon the upper surface, and is hirsute or covered with a thin cuticle, the under surface being smooth and shining. Von Möllendorff here reports a number of species without designating a type. I have not been able to discover a subsequent type designation and therefore now select *Hemitrichia xanthotrichia* Pfeiffer, the first species of Möllendorff's list, as the type.

Von Möllendorff says³ that according to Semper and Pfeiffer the follow-

¹ Published by permission of the Secretary of the Smithsonian Institution.

² *Nachrichtsbl. deutschen Malak. Ges.*, 1888, vol. 20, p. 81.

³ *Reisen im Archipel der Philippinen*, vol. 8, p. 148, 1902.

ing anatomic characters are present in the group: The foot is tripartite in *H. setigera*. The caudal horn development is completely reduced in *H. setigera*, while in *H. luteofasciata* the terminal caudal portion is provided with an exceedingly long horn. The reproductive system is said to be without accessory organs in *H. luteofasciata*, according to Semper. The glandula mucosa is present, according to Pfeiffer, in *H. setigera*. The jaw possesses a middle tooth and the radula resembles that of *Macrochlamys*.

Hemitrichias are leaf-mulch dwellers. In the rainy season they leave their hiding places and walk about over the vegetation on the ground and may climb trees to some distance above the ground. Most of the species are rarely found in large numbers in any one place.

The large quantity of material before me divides easily into three groups, which I shall designate as subgenera. It is unfortunate that no specimens for dissection are at hand, for it seems more than likely that the groups which I am designating below, based upon shell characters, will also have anatomic support. This is indicated by the references that Semper and others make. *Hemitrichia luteofasciata* is said to have a caudal horn, while in *H. setigera* this is said to be absent.

The subjoined key will readily characterize the three groups.

KEY TO THE SUBGENERA OF *Hemitrichia*.

- Granules of the upper surface bearing hairs.....*Hemitrichia*
- Granules of the upper surface not bearing hairs.
- Granules of the upper surface bearing scales.....*Lepidotrichia*
- Granules of the upper surface not bearing scales.
- Upper surface covered with a thin periostracum.....*Atrichoconcha*

Subgenus HEMITRICHIA.

Shell with the upper, or upper and peripheral, or sometimes even posterior basal, surface papillose. The papillae surmounted by a hair-like cuticular projection.

Type.—*Hemitrichia xanthotrichia* Pfeiffer (= *H. velutina* Sowerby).

KEY TO THE SPECIES OF THE SUBGENUS *Hemitrichia*.

- Axial ribs and trichose spiral threads terminating in a conspicuous angle on the base.
- Periphery strongly angulated.
- Space between periphery and basal angulation rounded.....*cinnamomea*
- Space between periphery and basal angulation not rounded.
- Space between periphery and basal angulation almost flattened.
- Hairs exceedingly short.....*pruinosa*
- Hairs not exceedingly short.
- Hairs moderately long.....*consimilis*
- Periphery not strongly angulated.
- Periphery almost rounded.
- Trichose spiral threads between summit and periphery more than 33.

- Trichose spiral threads on base 36.....*brachytricha*
 Trichose spiral threads on base 28.....*velutinella*
 Trichose spiral threads between summit and periphery less
 than 25.....*xanthotrichia*
 Axial ribs and trichose spiral threads not terminating in conspicu-
 ous angle on the base.
 Basal angle merely indicated.
 Chestnut colored band extending over all the trichose portion
 of the base.....*platyzona*
 Chestnut colored band extending only over a small portion of
 the trichose portion of the base.....*kobelti*
 Basal angle not merely indicated.
 Basal angle absent.
 Hairs upon the upper surface developed into long, strong
 setae.....*setigera*
 Hairs upon the upper surface not developed into long, strong
 setae.
 Periphery of the last whorl conspicuously angulated.....*striatula*
 Periphery of the last whorl not conspicuously angulated.
 Periphery of the last whorl obsoletely angulated.
 Shell banded.
 Spiral lirations between summit and periphery more
 than 30.
 Periphery and base with a narrow chestnut colored
 band.....*aparriana*
 Periphery and base without a narrow chestnut
 colored band.
 Shell chestnut brown on the anterior half of
 upper and posterior half of lower sur-
 face.....*pandana*
 Spiral lirations between summit and periphery less
 than 25.
 Shell with a narrow peripheral chestnut colored
 band only.....*hidalgoi*
 Shell not with a narrow peripheral chestnut
 colored band only.
 Shell with a peripheral and basal chestnut
 colored band⁴.....*tagalensis*
 Shell without a peripheral and basal chestnut
 colored band.
 Shell chestnut brown on anterior half of upper
 and posterior half of lower surface.....*setosula*
 Shell chestnut brown on anterior half of
 upper but not posterior half of lower
 surface.....*boettgeri*
 Shell not banded but unicolor.....*abraea*

⁴ Sometimes a third dark band is present between the periphery and the summit.

HEMITRICHIA (HEMITRICHIA) PRUINOSA Möllendorff.

Shell helicoid, horn-colored. Nuclear whorls well rounded, marked by lines of growth only. Postnuclear whorls well rounded, marked by very fine, wavy, slightly retractively slanting, axial riblets and numerous, closely spaced, spiral threads, the junctions of the two forming tubercles which bear very short, pale yellowish hairs. Periphery obtusely angulated. Posterior two-fifths of the base marked by the continuations of the axial riblets and spiral threads, similar in strength to those of the spire. The trichose portion of the base terminates abruptly anteriorly in a ridge. The area between this ridge and the periphery is almost flattened. The rest of the base is marked by lines of growth and numerous, very closely spaced, microscopic spiral striations. Aperture broadly oval; outer lip curving a little more abruptly from the periphery toward the summit than it does basally; inner lip expanded toward its insertion where it is reflected over the umbilicus as a white callus.

The present species is closely related to *Hemitrichia* (*Hemitrichia*) *consimilis* Quadras and Möllendorff, but differs from it by having much shorter hairs of a little paler color.

KEY TO THE SUBSPECIES OF *Hemitrichia* (*Hemitrichia*) *pruinosa*.

Trichose spirals between periphery and basal angle more than 50.....*depressa*
 Trichose spirals between periphery and basal angle 40.....*pruinosa*
 Trichose spirals between periphery and basal angle 29.....*zambalesana*

HEMITRICHIA (HEMITRICHIA) PRUINOSA DEPRESSA

Möllendorff.

This subspecies comes from Bayabas, Bulacan, Luzon. Möllendorff gives the measurements as: Height 10.7 mm.; greater diameter 20.5 mm.; height of aperture 8.7 mm.; diameter 11 mm.

HEMITRICHIA (HEMITRICHIA) PRUINOSA PRUINOSA

Möllendorff.

U.S.N.M. No. 184614, a topotype, comes from Montalban, Luzon. It has 5.9 whorls and measures: Height 13.7 mm.; greater diameter 21.2 mm.; lesser diameter 18.7 mm.

***Hemitrichia* (*Hemitrichia*) *pruinosa zambalesana*, new subspecies.**

The type of this subspecies, U.S.N.M. No. 311413, comes from San Antonio, Zambales, Luzon. It has 5.3 whorls and measures: Height 12.7 mm.; greater diameter 20.3 mm.; lesser diameter 17.9 mm.

HEMITRICHIA (HEMITRICHIA) CONSIMILIS

Quadras and Möllendorff.

Shell helicoid, moderately large, pale brown, sometimes straw-colored. Nuclear whorls well rounded, smooth, marked by lines of growth only. Postnuclear whorls well rounded, marked by numerous, feeble, retractively

slanting axial riblets and spiral striations, which are almost of the same strength as the riblets. Periphery angulated. Basal angle conspicuous. The space between the periphery and basal angle flattened, ornamented like the spire. The rest of the base is smooth, excepting lines of growth and numerous, closely spaced, microscopic spiral striations. Aperture oval; outer lip curving a little more abruptly toward the summit than the base from the periphery; inner lip expanded at its insertion where it is reflected over the umbilicus as a white callus.

This species is very closely related to *H. (H.) pruinosa* Möllendorff, but differs from it by usually being brown instead of horn-colored, and in having the hairs about double the length of those on *H. (H.) pruinosa*.

KEY TO THE SUBSPECIES OF *Hemitrichia (Hemitrichia) consimilis*

Quadras and Möllendorff.

Trichose spiral threads between summit and periphery 40.

Trichose spiral threads on base 38.....*consimilis*

Trichose spiral threads on base 35.....*sibuyanensis*

Trichose spiral threads between summit and periphery 35.....*badajosana*

HEMITRICHIA (HEMITRICHIA) CONSIMILIS CONSIMILIS .

Quadras and Möllendorff.

U.S.N.M. No. 311415, a topotype, comes from Tablas Island. It has 5.6 whorls and measures: Height 13.2 mm.; greater diameter 21.3 mm.; lesser diameter 18.6 mm.

Hemitrichia (Hemitrichia) consimilis sibuyanensis, new subspecies.

The type, U.S.N.M. No. 311414, comes from the Island of Sibuyan. It has 5.8 whorls and measures: Height 13.7 mm.; greater diameter 21 mm.; lesser diameter 18.2 mm.

Hemitrichia (Hemitrichia) consimilis badajosana, new subspecies.

The type, U.S.N.M. 311419, comes from Badajos, Tablas Island. It has 5.4 whorls and measures: Height 12 mm.; greater diameter 20.3 mm.; lesser diameter 17.5 mm.

HEMITRICHIA (HEMITRICHIA) BRACHYTRICHA Möllendorff.

Shell helicoid, rather inflated, whorls pale brown, usually a little darker on the base than on the spire. Nuclear whorls smooth except for lines of growth. Postnuclear whorls inflated, marked by closely spaced, slender, wavy, retractively curving axial riblets and trichose spiral threads, which are almost as strong as the riblets. The peripheral angulation, characteristic of most species of *Hemitrichia*, in this species is merely indicated on the first portion of the last turn and disappears completely on the latter portion of this whorl leaving the periphery well rounded. The basal termination of the axial and trichose spiral sculpture is marked by a conspicuous angle. The rest of the base is smooth, polished, marked by lines of growth, and very closely spaced microscopic spiral striations. Aperture broadly oval; outer lip curving a little more abruptly toward the summit

from the periphery than it does basally; inner lip expanded at its insertion where it is reflected over the umbilicus. Interior of aperture white with a purplish tinge.

KEY TO THE SUBSPECIES OF *Hemitrichia* (*Hemitrichia*) *brachytricha*
Möllendorff.

Trichose spiral threads between summit and periphery 34.....*brachytricha*
Trichose spiral threads between summit and periphery not 34.

Trichose spiral threads between summit and periphery 29....*albayana*

Trichose spiral threads between summit and periphery 25....*batanensis*

HEMITRICHIA (HEMITRICHIA) BRACHYTRICHA
BRACHYTRICHA Möllendorff.

U.S.N.M. No. 116560 contains 2 specimens of this subspecies, collected by Cuming, the exact locality for which is not known. One of these has 5.2 whorls and measures: Height 15 mm.; greater diameter 23.8 mm.; lesser diameter 20.4 mm.

***Hemitrichia* (*Hemitrichia*) *brachytricha albayana*, new subspecies.**

The type, U.S.N.M. No. 311411, comes from Malinao, Albay, Luzon. It has 5.3 whorls and measures; Height 15.2 mm.; greater diameter 23.7 mm.; lesser diameter 20.2 mm.

***Hemitrichia* (*Hemitrichia*) *brachytricha batanensis*, new subspecies.**

The type, U.S.N.M. No. 256202, comes from near the coal mines on Batan Island off east Luzon. It is a not quite mature specimen having 5 whorls and measures: Height 13.7 mm.; greater diameter 20.3 mm.; lesser diameter 17.7 mm.

HEMITRICHIA (HEMITRICHIA) KOBELTI Möllendorff.

Shell helicoid. Nuclear whorls flesh-colored, the rest of the turns flesh-colored with a greenish-yellow tinge on the upper surface, pale brown on the base. A broad chestnut-colored zone is present at the periphery and extends a little more toward the summit than it does toward the base. Nuclear whorls smooth excepting growth wrinkles. Postnuclear whorls well rounded, marked by fine, wavy, retractively slanting axial riblets and numerous, trichose spiral lirations, the junction of the two forming tubercles which are surmounted by slender, golden-yellow hairs. Periphery almost rounded. Base somewhat inflated, rounded, the posterior third marked by the continuations of the axial ribs and trichose spiral threads equaling those of the spire in strength, the rest of the base being marked by lines of growth and closely spaced, microscopic spiral striations. Aperture oval; outer lip curving a little more abruptly toward the summit than toward the base from the periphery; inner lip strongly arched, expanded at its insertion and there reflected over the umbilicus as a whitish callus.

KEY TO THE SUBSPECIES OF *Hemitrichia* (*Hemitrichia*) *kobelti* Möllendorff.

Trichose spiral threads between summit and periphery 32.....*kobelti*

Trichose spiral threads between summit and periphery 27.....*romblonensis*

HEMITRICHIA (HEMITRICHIA) *KOBELTI* KOBELTI Möllendorff.

U.S.N.M. No. 184835, a topotype, comes from Sibuyan Island. It has 6.5 whorls and measures: Height 17.5 mm.; greater diameter 28.4 mm.; lesser diameter 24.4 mm.

***Hemitrichia* (*Hemitrichia*) *kobelti romblonensis*, new subspecies.**

The type, U.S.N.M. No. 256205, comes from Romblon Harbor, Romblon Island. It has 5.2 whorls and measures: Height 12.8 mm.; greater diameter 21.8 mm.; lesser diameter 19.1 mm.

HEMITRICHIA (HEMITRICHIA) *SETIGERA* Sowerby.

Shell varying from helicoid to subglobular in shape. The early whorls are pale brown, the later turns chestnut-colored on the upper surface, while the base has a greenish-yellow zone about one-fourth of the distance between the periphery and the umbilicus anterior to the periphery, which varies somewhat in width in the various subspecies. Anterior to this zone is a broad band of brown equal to about two-fifths of the width of the shell, while the inner portion is greenish-yellow. The whorls of the spire are inflated, strongly rounded and marked by rather rough lines of growth and slender spiral threads which are more or less equal and equally spaced. These spiral threads extend over the periphery on to the posterior portion of the base, sometimes terminating at the narrow light zone and in some subspecies passing beyond this. On the upper surface there are strongly developed, hair-like appendages, which are placed on the spiral threads at rather regular intervals. These lend to the shell a decidedly hairy appearance. On the posterior basal portion where the spiral threads are present these hairs are less strongly developed, in fact usually worn off, probably on account of the progression of the animal, for near the aperture on the last whorl they are quite well developed. The base, in addition to these stronger spirals on the posterior portion, is marked between them by fine, closely spaced, wavy, spiral striations, which also extend over the anterior portion of the base, though in a little more microscopic form. Aperture broadly oval; the outer lip curving a little more abruptly toward the summit than the base; the inner lip strongly arched and becoming somewhat expanded toward its insertion where it is reflected over the umbilical chink.

The following key and descriptions will help to differentiate the subspecies

KEY TO THE SUBSPECIES OF *Hemitrichia* (*Hemitrichia*) *setigera* Sowerby.

Heavy trichose spirals on first postnuclear whorl 4.....*quadras*

Heavy trichose spirals on first postnuclear whorl not 4.

Heavy trichose spirals on first postnuclear whorl 5.

Spiral lirations on base extending below light zone.	
Basal lirations 27.....	<i>balerana</i>
Basal lirations not 27.	
Basal lirations 21.....	<i>casigurana</i>
Basal lirations not 21.	
Basal lirations 19.	
Trichose spirals on last whorl 19.....	<i>tauitana</i>
Trichose spirals on last whorl 15.....	<i>makabengana</i>
Basal lirations not 19.	
Basal lirations 17.....	<i>palanana</i>
Basal lirations 15.....	<i>setigera</i>
Spiral lirations on base not extending below light zone.....	<i>malupana</i>
Heavy trichose spirals on first postnuclear whorl 6.	
Spiral lirations on base extending below light zone.	
Basal lirations not more than 20.....	<i>polilloensis</i>
Basal lirations more than 22.....	<i>batangasana</i>
Spiral lirations on base not extending below light zone.....	<i>moellendorffi</i>

***Hemitrichia (Hemitrichia) setigera quadrasi*, new subspecies.**

The type, U.S.N.M. No. 311388, comes from Alcala, Cagayan, Luzon. It has 6.8 whorls and measures: Height 22.7 mm.; greater diameter 32.4 mm.; lesser diameter 28.3 mm.

***Hemitrichia (Hemitrichia) setigera balerana*, new subspecies.**

The type, U.S.N.M. No. 311392, comes from Baler, Tayabas, Luzon. It has 6.2 whorls and measures: Height 20.2 mm; greater diameter, 30.6 mm.; lesser diameter 26.7 mm.

***Hemitrichia (Hemitrichia) setigera casigurana*, new subspecies.**

The type, U.S.N.M. No. 311437, comes from Sitio Dinog, Casiguran, Luzon. It has 6.5 whorls and measures: Height 19.2 mm.; greater diameter 27.2 mm.; lesser diameter 24.1 mm.

***Hemitrichia (Hemitrichia) setigera tautana*, new subspecies.**

The type, U.S.N.M. No. 311389, was collected at Tautit, Apayao, Luzon. It has 6.3 whorls and measures: Height 22 mm.; greater diameter 31 mm.; lesser diameter 27 mm.

***Hemitrichia (Hemitrichia) setigera makabengana*, new subspecies.**

The type, U.S.N.M. No. 311393, comes from Makabenga, Nueva, Vizcaya, Luzon. It has 6.2 whorls and measures: Height 20.6 mm.; greater diameter 26.7 mm.; lesser diameter 23.1 mm.

***Hemitrichia (Hemitrichia) setigera palanana*, new subspecies.**

The type, U.S.N.M. No. 311394, comes from Paguidin, Palanan, Isabella, Luzon. It has 6.8 whorls and measures: Height 22.3 mm.; greater diameter 29.1 mm.; lesser diameter 25.8 mm.

HEMITRICHIA (HEMITRICHIA) SETIGERA Sowerby.

U.S.N.M. No. 311396 contains a specimen from Claveria, Cegayan, Luzon. It has 6.7 whorls and measures: Height 23.7 mm.; greater diameter 35 mm.; lesser diameter 30.2 mm.

Hemitrichia (Hemitrichia) setigera malupana, new subspecies.

The type, U.S.N.M. No. 311397, comes from Malupa, Panay. It has 6.6 whorls and measures: Height 24 mm.; greater diameter 33.6 mm.; lesser diameter 29.4 mm.

Hemitrichia (Hemitrichia) setigera polilloensis, new subspecies.

The type, U.S.N.M. No. 311400, comes from Polillo Island. It has 7.1 whorls and measures: Height 23 mm.; greater diameter 29.5 mm.; lesser diameter 26.2 mm.

Hemitrichia (Hemitrichia) setigera batangasana, new subspecies.

The type, U.S.N.M. No. 311398, comes from Lipa, Batangas, Luzon. It has 6.9 whorls and measures: Height 22 mm.; greater diameter 29 mm.; lesser diameter 26.5 mm.

Hemitrichia (Hemitrichia) setigera moellendorffi, new subspecies.

The type, U.S.N.M. No. 311399, comes from Cagayan, Luzon. It has 6.9 whorls and measures: Height 25.3 mm.; greater diameter 32.3 mm.; lesser diameter 28.6 mm.

Hemitrichia (Hemitrichia) aparriana, new species.

Shell depressed, helicoid, thin, horn-colored with a narrow chestnut-colored peripheral zone and another a little wider on the middle of the base. Nuclear whorls 2.3, well rounded, separated by a strongly impressed suture, and marked by obsolete axial riblets. The junction between the nucleus and the postnuclear whorls is strongly marked, and the trichose ornamentation begins with the beginning of the postnuclear turns. The postnuclear whorls are moderately rounded, separated by a well impressed suture, ornamented by closely spaced axial riblets which are more or less wavy, and slightly retractively slanting and numerous, almost equal and almost equally spaced spiral threads, which are about as strong as the riblets. The junction of these two elements forms rounded nodules which are surmounted by moderately long yellowish hairs when the epidermis is present. Of these spiral threads 31 occur between the summit and the periphery in the type. Periphery obtusely angulated, base well rounded, somewhat inflated and marked on the posterior third by the continuation of the axial riblets and spiral threads; of the latter 35 are present. The axial riblets continue feebly over the rest of the base and the spirally sculptured zone and terminate anteriorly without a conspicuous demarcation. The anterior portion of the base is marked, in addition to the irregular lines of growth, by closely spaced, wavy, microscopic spiral striations. Aperture moderately large, broadly oval; outer lip curving

a little more abruptly from the periphery to the summit than it does from the periphery to the base; inner lip strongly arched, slightly expanded toward its insertion where it is reflected partly over the umbilicus. The interior of the aperture is bluish with the brown bands showing conspicuously.

The type, U.S.N.M. No. 311403, comes from Aparri, Cagayan, Luzon. It is an immature specimen having 4.8 whorls and measures: Height 10.2 mm.; greater diameter 15.8 mm.; lesser diameter 13 mm.

Hemitrichia (Hemitrichia) pandana, new species.

Shell helicoid; nuclear turns 2.3, flesh-colored, the rest of the shell having a broad zone of greenish yellow adjacent to the summit which covers about one-third of the distance between the summit and the periphery; the inner two-fifths of the base is of the same color, while the rest of the whorls are pale chestnut-brown. The whorls are strongly rounded and separated by a well impressed suture. They are marked by slender, wavy, retractively slanting axial riblets and numerous equal and equally spaced spiral threads, which are almost equal to the axial riblets in strength and form nodules at their junction with them. Of these threads, 34 occur between the summit and the obtusely angulated periphery. Base somewhat inflated, strongly rounded, the posterior third marked by the continuation of the sculpture characteristic of the upper portion of the whorls, 36 spiral threads being present. The anterior three-fifths is marked by feeble lines of growth and numerous, wavy, closely spaced, microscopic spiral striations. Aperture large, broadly ovate, bluish white within; the outer lip curving much more strongly from the periphery to the summit than it does from the periphery to the base; inner lip strongly arched, slightly expanded at its insertion where it is reflected over the umbilicus which it almost closes.

The type, U.S.N.M. No. 311404, comes from Pandan, Antiqua, Panay. It has 5.6 whorls and measures: Height 16.8 mm.; greater diameter 24.3 mm.; lesser diameter 21.3 mm.

HEMITRICHIA (HEMITRICHIA) HIDALGOI Möllendorff.

Shell varying from depressed-helicoid to subglobose. The periphery varies from well rounded in *H. (H.) h. matuliana* to somewhat flattened in *H. (H.) h. stenostoma* Möllendorff. The number of trichose spiral lines on the last whorl varies from 14 in *H. (H.) h. matuliana* to 19 in *H. (H.) h. globosa* Möllendorff. The hairs are pale yellow and a trifle shorter than those of *H. (H.) tagalensis* Dohrn. The posterior portion of the base bears a sculpture similar to that of the upper portion of the last turn. The number of trichose spirals here varies from 19 in *H. (H.) h. hidalgoi* to 23 in *H. (H.) h. globosa*. The shape of the aperture varies from broadly ovate in *H. (H.) h. globosa* to rather compressed in *H. (H.) h. stenostoma*. The shell is almost unicolored, the early whorls being flesh-colored and the rest more or less straw-colored, the last whorl, particularly the last half, usually a little darker. All the races so far known have a single narrow peripheral brown band.

KEY TO THE SUBSPECIES OF *Hemitrichia* (*Hemitrichia*) *hidalgoi* Möllendorff.

Trichose spiral threads between summit and periphery 14 or 15.

Trichose spiral threads on base 19.....*hidalgoi*

Trichose spiral threads on base 22.....*matuliana*

Trichose spiral threads between summit and periphery 19.....*globosa*

Hemitrichia (*Hemitrichia*) *hidalgoi stenostoma* belongs here, but I have not seen specimens and hence can not key it.

HEMITRICHIA (HEMITRICHIA) HIDALGOI HIDALGOI
Möllendorff.

U.S.N.M. No. 311405, a topotype, comes from Montalban, Luzon. It has 5.5 whorls and measures: Height 20 mm.; greater diameter 30 mm.; lesser diameter 25 mm.

Hemitrichia (*Hemitrichia*) *hidalgoi matuliana*, new subspecies.

The type, U.S.N.M. No. 311406, comes from Mt. Matuli, Luzon. It has 6 whorls and measures: Height 22.5 mm.; greater diameter 29.2 mm.; lesser diameter 24.9 mm.

HEMITRICHIA (HEMITRICHIA) HIDALGOI GLOBOSA
Möllendorff.

A topotype, U.S.N.M. No. 184619, comes from Morong, Luzon. It has 5.7 whorls and measures: Height 19.1 mm.; greater diameter 28 mm.; lesser diameter 24 mm.

HEMITRICHIA (HEMITRICHIA) HIDALGOI STENOSTOMA
Möllendorff.

The type comes from the village Cuyapo, Nueva Ecija, Luzon, and the measurements given by Möllendorff are: Height 17 mm.; greater diameter 27 mm.

HEMITRICHIA (HEMITRICHIA) TAGALENSIS Dohrn.

Shell helicoid, ground color varying from flesh-color to straw-color. All the races have a peripheral and a basal color band. The peripheral band may be narrow, as in *H. (H.) t. casigurana* and *H. (H.) t. mearnsi*, or it may be broad as in *H. (H.) t. tagalensis*. In the last-named subspecies there is also present a narrow brown band between the summit and the dark band at the periphery. Here, too, the basal band is much broader than in any of the other races, and as a result this subspecies has a rather dark appearance. The whorls are well rounded and marked by wavy, retractively slanting, closely spaced, axial riblets, which are crossed by spiral threads a little weaker than the axial riblets. The junction of the two supports moderately long hairs, which are golden-yellow and are a trifle longer than are those of *H. (H.) hidalgoi*. The number of these trichose threads varies in the different races from 20 to 23 between the summit and the periphery. The periphery is well rounded with, at best,

only an obsolete angulation. The posterior two-fifths of the base is marked by the continuations of the axial riblets and trichose spiral threads. Of these, 20 to 28 occur in the different subspecies. The trichose sculpture is not strongly bounded at its anterior termination on the base. The inner three-fifths of the base is marked by mere lines of growth and closely spaced, fine, microscopic, wavy spiral striations. Aperture moderately large and oval. This species is nearest related to *H. (H.) hidalgoi*, but differs from it in having the basal color band and in having more trichose spiral lirations both on the spire and base.

The following key will readily distinguish the three groups.

KEY TO THE SUBSPECIES OF *Hemitrichia (Hemitrichia) tagalensis* Dohrn.

Peripheral dark zone narrow.

Basal trichose spirals 20.....*principensis*

Basal trichose spirals more than 25.....*mearnsi*

Peripheral dark zone broad.....*tagalensis*

***Hemitrichia (Hemitrichia) tagalensis principensis*, new subspecies.**

The type, U.S.N.M. No. 311407, comes from Sitio Ilinog, Casiguran, Principe, Luzon. It has 5.9 whorls and measures: Height 16.8 mm.; greater diameter 25.5 mm.; lesser diameter 21.8 mm.

***Hemitrichia (Hemitrichia) tagalensis mearnsi*, new subspecies.**

The type, U.S.N.M. No. 311408, comes from Baler, Luzon. It has 5.9 whorls and measures: Height 19.1 mm.; greater diameter 27 mm.; lesser diameter 23 mm.

HEMITRICHIA (HEMITRICHIA) TAGALENSIS TAGALENSIS
Dohrn.

U.S.N.M. No. 311409 comes from Sitio Disigun, Casiguran, Luzon. It has 5.9 whorls and measures: Height 19.2 mm.; greater diameter 28.8 mm.; lesser diameter 24.2 mm.

***Lepidotrichia*, new subgenus.**

In *Lepidotrichia* the upper, peripheral, and posterior basal surfaces are finely papillose. The papillae instead of bearing hair-like appendages as in *Hemitrichia* ss., have minute scales which bend over into tiny pearl-like elements.

Type species, *Hemitrichia (Lepidotrichia) purpurascens* Möllendorff.

So far only a single species known belongs to this group.

***Atrichoconcha*, new subgenus.**

This subgenus is created to embrace those members of the genus *Hemitrichia* that have the upper surface covered with a thin periostracum. No hairs are present on the granules of the upper surface.

Type species, *Hemitrichia (Atrichoconcha) luteofasciata* Lea.

KEY TO THE SPECIES OF *Atrichiconcha*.

- Spiral sculpture extending from the summit to the periphery.
 Spiral sculpture extending from the summit to the periphery only.
 Spiral lirations more than 24.....*laccata*
 Spiral lirations less than 20.
 Light subperipheral band present.
 Summit of the whorls with a light zone.....*semisculpta*
 Summit of the whorls without light zone.....*gummata*
 Light subperipheral band absent.....*flavida*
 Spiral sculpture not extending from the summit to the periphery only.
 Spiral sculpture extending over part of the base.
 Periphery strongly angulated.....*oblita*
 Periphery not strongly angulated.
 Periphery rounded.
 Shell chestnut-brown.....*bakeri*
 Shell horn-colored.....*panayensis*
 Spiral sculpture not extending from the summit to the periphery.
 Spiral sculpture extending over the posterior portion of the whorls only.....*luteofasciata*

HEMITRICHIA (ATRICHICONCHA) SEMISculpta Möllendorff.

In this species the form varies from depressed-helicoid to rather elevated. The entire upper surface beneath the pale brown, dehiscent cuticle is covered with equally or subequally spaced spiral lirations. These lirations range from 14 to 22, but this number appears quite constant for the various subspecies, i. e. zoogeographic races. The upper surface has a light zone at the summit which varies in width in the different subspecies, the rest of the upper surface being chestnut-brown. Immediately below the periphery there is a yellow or flesh-colored band, which in some of the subspecies is rather narrow, in others, wide, but again a constant feature for the particular race in question. The base has a broad dark zone immediately anterior to the subperipheral light zone, which differs in intensity in the different subspecies and covers two-fifths to one-half of the base. The inner portion of the base, that is, the umbilical half, or two-thirds, may be white, pale yellow, or pale rose-colored. The upper surface is marked by fine, rather broad, depressed, retractively curved axial riblets, over which the spiral lirations pass conspicuously.

This species is nearest related to *H. (A.) gummata* Sowerby, from which it may, however, be at once distinguished by the presence of the yellow zone at the summit.

KEY TO THE SUBSPECIES OF *Hemitrichia* (*Atrichoconcha*) *semisculpta*
Möllerndorff.

Spiral liration 22.....	<i>webbi</i>
Spiral lirations not 22.	
Spiral lirations 19.	
Basal brown band very dark chestnut.....	<i>cataduanensis</i>
Basal brown band light chestnut.....	<i>semisculpta</i>
Spiral lirations not 19.	
Spiral lirations 18.....	<i>polagana</i>
Spiral lirations not 18.	
Spiral lirations 15.....	<i>antimonana</i>
Spiral lirations not 15.	
Spiral lirations 14.....	<i>woodi</i>

***Hemitrichia* (*Atrichoconcha*) *semisculpta webbi*, new subspecies**

The type, U.S.N.M. No. 311379, comes from Donsal, Sorsogon, Luzon. It has 6 whorls and measures: Height 20 mm.; greater diameter 31.2 mm.; lesser diameter 27 mm.

***Hemitrichia* (*Atrichoconcha*) *semisculpta cataduanensis*, new subspecies.**

The type, U.S.N.M. No. 311022, comes from Cataduanes Island. It has 5.5 whorls and measures: Height 22.7 mm.; greater diameter 29 mm.; lesser diameter 25.6 mm.

HEMITRICHIA (ATRICHOCOCONCHA) SEMISCUPTA
SEMISCUPTA Möllerndorff.

U.S.N.M. No. 311380, a topotype, comes from Caramuan, Canarines, Luzon. It has 6 whorls and measures: Height 20 mm.; greater diameter 28.2 mm.; lesser diameter 24 mm.

***Hemitrichia* (*Atrichoconcha*) *semisculpta polagana*, new subspecies.**

The type, U.S.N.M. No. 311381, comes from Polag Bay, Luzon. It is a not quite mature specimen having 5.9 whorls and measures: Height 17.1 mm.; greater diameter 23.8 mm.; lesser diameter 21.1 mm.

***Hemitrichia* (*Atrichoconcha*) *semisculpta antimonana*, new subspecies.**

The type, U.S.N.M. No. 311382, comes from Antimonan, Tayabas, Luzon. It has 5.9 whorls and measures: Height 21 mm.; greater diameter 27 mm.; lesser diameter 23.7 mm.

***Hemitrichia* (*Atrichoconcha*) *semisculpta woodi*, new subspecies.**

The type, U.S.N.M. No. 311383, comes from Manila, probably the market, and not its normal habitat. It has 6.4 whorls and measures: Height 19.2 mm.; greater diameter 31.8 mm.; lesser diameter 27.3 mm.

HEMITRICHIA (ATRICHONCONCHA) GUMMATA Sowerby.

In this species the entire upper surface is covered with spiral lirations under the dehiscent cuticle. There are 15 or 16 of these present. The entire upper surface is brown. There is no white zone at the summit. A broad light zone is present immediately anterior to the periphery, the rest of the base being brown, except a small area at the umbilicus, which tends toward flesh color. Base marked by fine lines of growth and numerous, closely spaced, wavy, spiral striations. It is nearest related to *H. (A.) semisculpta*, from which the absence of the light zone at the summit will at once distinguish it.

KEY TO THE SUBSPECIES OF *Hemitrichia (Atrichonconcha) gummata* Sowerby.

Diameter more than 29 mm. *obscura*
Diameter less than 25 mm. *gummata*

HEMITRICHIA (ATRICHONCONCHA) GUMMATA OBSCURA
Möllendorff.

U.S.N.M. No. 311378 comes from Molinao, Albay, Luzon. It has 5.6 whorls and measures: Height 20.4 mm.; greater diameter 30.3 mm.; lesser diameter 24.8 mm.

HEMITRICHIA (ATRICHONCONCHA) GUMMATA GUMMATA
Sowerby.

U.S.N.M. No. 116582 is a cotype with the label "Luzon." It has 5.2 whorls and measures: Height 15.8 mm.; greater diameter 18 mm.; lesser diameter 21.5 mm.

HEMITRICHIA (ATRICHONCONCHA) OBLITA Möllendorff.

Shell rather depressed, helicoid, covered with a thin, pale brown, dehiscent cuticle. The spiral sculpture extends over the upper surface of the whorls, the periphery, and the posterior portion of the base. Periphery strongly angulated. A dark brown band is present either at the periphery or immediately posterior to it. The base may be unicolor or the umbilical portion may be lighter. This species is nearest related to *H. (A.) bakeri* and *H. (A.) panayensis*, from which the angulated periphery will at once distinguish it. The following key will help in separating the two known subspecies.

KEY TO THE SUBSPECIES OF *Hemitrichia (Atrichonconcha) oblita* Möllendorff.

Base with a light zone at the umbilicus. *oblita*
Base without a light zone at the umbilicus. *tayabasana*

HEMITRICHIA (ATRICHONCONCHA) OBLITA OBLITA
Möllendorff.

U.S.N.M. No. 184615 comes from Morong, Luzon. It has 5.7 whorls and measures: Height 15.3 mm.; greater diameter 24.2 mm.; lesser diameter 20.8 mm.

Hemitrichia (Atrichococoncha) oblita tayabasana, new subspecies.

The type, U.S.N.M. No. 311384, comes from Baler, Tayabas, Luzon. It has 5.7 whorls and measures: Height 17.3 mm.; greater diameter 23.3 mm.; lesser diameter 22.2 mm.

Hemitrichia (Atrichococoncha) bakeri, new species.

Shell small, helicoid, subglobular, the upper surface covered by a thin, pale brown, dehiscent cuticle. When the cuticle is removed the first 2.5 whorls are flesh-colored, the rest chestnut-brown on the upper surface. The periphery is marked by a narrow flesh-colored zone with a yellowish tinge. Immediately posterior to this zone there is a narrow, very dark, chestnut-brown zone, considerably darker than the rest of the upper portion of the whorls. The base is chestnut-brown, a little paler than the upper surface with the area within the umbilicus a trifle lighter. The upper surface of the whorls is strongly inflated and rounded, marked by numerous, irregularly wavy, low, rounded, retractively slanting axial riblets, which are crossed by 24 equal and almost equally spaced, spiral lines. The riblets and spiral sculpture extend over the well-rounded periphery and the posterior fifth of the base, there being 16 additional spiral lines on the base. The rest of the base is marked by strong lines of growth and numerous, wavy, closely spaced, microscopic, spiral striations. The base is inflated, strongly rounded, and rather impressed at the umbilicus. Aperture sub-circular; outer lip arched a little more strongly toward the summit than the base from the periphery; inner lip strongly arched, slightly expanding at its insertion where it is reflected over and almost covers the umbilical chink. The inside of the aperture is purplish brown with a light peripheral zone.

The type, U.S.N.M. No. 311093, comes from the east coast of Polillo Island. It has 5.9 whorls and measures: Height 15.8 mm.; greater diameter 21.4 mm.; lesser diameter 18.3 mm.

Hemitrichia (Atrichococoncha) panayensis, new species.

Shell small, helicoid, exceedingly thin, covered with a thin, horn-colored cuticle. When this is removed the first 2 turns are flesh-colored, the rest pale horn-colored. There is a narrow, bright, chestnut-brown band at the periphery bordered anteriorly by a band about the same width, a little paler than the upper surface of the whorl. The base is horn-colored, paling to flesh color within the umbilicus. The whorls are well rounded, separated by a rather impressed suture. The summit of the succeeding turns falls below the peripheral brown band. The whorls are marked by numerous, slender, wavy, rounded, closely crowded, retractively slanting axial riblets, which extend over the feebly angulated periphery and the posterior two-fifths of the base. In addition to this, there are 15 incised spiral lines between the summit and the brown peripheral band which are about equal and equally spaced. Three additional lines of the same strength mark the brown band, while the ribbed area of the base is marked by 20 incised spiral lines, the latter being a little more closely spaced than the rest.

The rest of the rather inflated, well rounded base is marked by lines of growth and numerous, closely crowded, wavy, spiral striations. Aperture oval; the outer lip curving a little more abruptly toward the summit than the base from the periphery; inner lip strongly curved, slightly expanded at its insertion and reflected over the umbilical chink, which it almost covers. The interior of the aperture is flesh-colored with a purplish tinge showing conspicuously the dark zone at the periphery.

The type, U.S.N.M. No. 196002, comes from Malupa, Panay. It has 6 whorls and measures: Height 14.8 mm.; greater diameter 22 mm.; lesser diameter 18.8 mm.

HEMITRICHIA (ATRICHONCONCHA) LUTEOFASCIATA Lea.

Shell large, the upper surface covered with a thin, dehiscent cuticle, the strong, incised, spiral striations of the whorl never covering the entire upper surface, but confined to the posterior portion. The spirally striated upper portion is also crossed by axial riblets, which evanesce immediately anterior to the termination of the incised spiral lines. The rest of the surface of the shell is marked by lines of growth and exceedingly fine, wavy, closely spaced, spiral striations. The upper surface of the shell may be horn color or chestnut brown. There is always a dark peripheral band present which on the brown shells is merely an intensification of that color. Below the peripheral brown zone there is a light zone of varying widths in the different races which is followed basally by a brown zone that again varies in width in the different subspecies, the inner portion of the base being yellow or greenish yellow. This species has been much misunderstood by previous writers. It is a rather compact group which can be distinguished at once from all the other forms by the fact that the spiral sculpture on the upper surface does not cover the entire whorl.

KEY TO THE SUBSPECIES OF *Hemitrichia* (*Atrichonconcha*) *luteofasciata* Lea.

Spiral lirations 16.....	<i>libmanana</i>
Spiral lirations not 16.	
Spiral lirations 14.....	<i>maculaboensis</i>
Spiral lirations not 14.	
Spiral lirations 12.....	<i>luteofasciata</i>
Spiral lirations not 12.	
Spiral lirations 11.....	<i>paracaleana</i>
Spiral lirations not 11.	
Spiral lirations 10.....	<i>conoidalis</i>
Spiral lirations not 10.	

Hemitrichia (*Atrichonconcha*) *luteofasciata libmanana*, new subspecies.

The type, U.S.N.M. No. 311386, comes from Libmanan, Camarines, Luzon. It has 6 whorls and measures: Height 24.7 mm.; greater diameter 36.3 mm.; lesser diameter 30.8 mm.

Hemitrichia (Atrichoconcha) luteofasciata maculaboensis, new subspecies

The type, U.S.N.M. No. 255197, comes from Maculabo Island of the Calaguas group. It has 6.5 whorls and measures: Height 25.8 mm.; greater diameter 39.6 mm.; lesser diameter 33.7 mm.

HEMITRICHIA (ATRICHONCONCHA) LUTEOFASCIATA
LUTEOFASCIATA Lea.

The type, U.S.N.M. No. 116566, comes from Manila. It has 6 whorls and measures: Height 23.3 mm.; greater diameter 34 mm.; lesser diameter 29.2 mm.

Hemitrichia (Atrichoconcha) luteofasciata paracaleana, new subspecies.

The type, U.S.N.M. No. 311387, comes from Paracale, Luzon. It has 6.1 whorls and measures: Height 23.1 mm.; greater diameter 32.3 mm.; lesser diameter 27.9 mm.

HEMITRICHIA (ATRICHONCONCHA) LUTEOFASCIATA
CONOIDALIS Möllendorff.

U.S.N.M. No. 311386, a topotype, comes from Antimonan, Tayabas, Luzon. It has 6.1 whorls and measures: Height 22.8 mm.; greater diameter 33 mm.; lesser diameter 28 mm.